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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/531,339

04/14/2005

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EXAMINER

VERDERAME, ANNA L

ART UNIT

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1795

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DELIVERY MODE

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/531,339	<b>Applicant(s)</b> TSUBOI ET AL.	
	<b>Examiner</b> ANNA L. VERDERAME	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The request for continued examination and the applicant's accompanying remarks have been carefully considered. A response is presented below.

#### **Claim Rejections - 35 USC § 103**

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tono et al. JP-2001-001645 in view of Azuma 2003/0166467 and Nagai et al. WO 02/096663(US 2004/0171485 used as an English language translation) and further in view of Tsutsui 5,547,500.

Tono et al. teaches a new reversible multiple color recording medium by which a more accurate, finer and clearer multiple color image can be expressed wherein a

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rewriting can be freely performed by deleting the image. As shown in figure 1, the recording medium contains a support 5, three heat-reversible recording layers 1-3 and two thermal break layers 4 formed between the first and second recording layers and between the second and third recording layers. The recording layers consist of a laminate of an absorption layer (1b,2b,3b) and a heat-reversible color coloring layer (1a,2a,3a). Materials for the substrate are disclosed at (0011). Use of cyanine and phthalocyanine as the light-to-heat absorbing materials is taught at (0026). The heat insulating function of the thermal break layers is discussed in the abstract. Two embodiments are discussed in which a red and then a blue and finally a green thermal-reversible recording layers are formed on a substrate(0040 and 0033). This ordering meets the limitation that the recording layer formed closes to the substrate absorb at the longest wavelength and that the wavelength at which subsequently formed layers absorb be shorter than this wavelength. At (0013) Tono teaches that in the case of three hues of red blue green or yellow, blue coloring layer is the lower layer (closest to the substrate), and the green layer is the middle layer, and the red layer is the topmost layer. Based upon the disclosure at (0013) it would be obvious to modify the media of the examples taught at (0033) & (0040) by changing the order of the green and blue layers.

The examiner notes that the reference teaches that each of the recording layers consists of a laminate structure having a light-to-heat transforming material formed in contact with the dye recording layer rather than having a recording layer in which these two materials are evenly distributed. However, it is further noted that the

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claims, as written, do not exclude laminate embodiments.

In addition to not teaching a reversible thermosensitive recording layer comprising a mixture of a heat-sensitive dye and a light-to-heat absorbing material, the reference also does not teach the recording method of claims 13-14.

Nagai et al. teaches a thermally sensitive recording layer containing at least a photo-absorbing material which absorbs laser ray and converts it to heat, an electron donating leuco dye, and an electron accepting color-developing agent. The leuco dye preferably absorbs at 660 nm or longer(abstract). Cyanines and phthalocyanines are mentioned as photo-absorption materials[(WO page 5)/(0015)]. Leuco dyes are discussed beginning at [(WO page 6)/(0017)]. Binders used in the recording layer are discussed at [(WO page 6)/(0017)]. Substrates are discussed at [(WO page 15)/(0044)]. Developing agents are discussed at [(WO page 9)/(0031)]. The recording layer according to this invention has excellent sensitivity(0012)o

In example one Azuma teaches a recording layer containing a light-to heat converting dye, a leuco dye, a reversible developer, and a resin(0078-0082). Developers taught at (0053). Disclosure that the light-to-heat converting dye can be incorporated into a layer different from, but in contact with, the layer containing the leuco dye is found at (0058). Alternatively, both can be provided in the same layer (0058).

These references are relied upon for their teachings of thermally reversible recording layers like those of the instant application, and for their disclosure of the

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equivalence of laminate and mixed thermally reversible recording layers.

Tsutsui teaches a method for recording in a reversible thermal coloring recording media. The medium can be recorded by recording a negative or a positive image. A negative image is formed when a colored recording layer is selectively decolored to form an image. A positive image is formed when a colorless recording layer is selectively colored to form an image. This process is disclosed at (10/46-11/17). The colored or decolored recording layer is formed by heating.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the thermally reversible multicolor medium taught by Tono et al. at [0033] & (0040) by changing the order of the green and blue layers based upon the teachings at [(0013), by replacing the laminate recording layer structures with mixed layers like those taught by Azuma and Nagai et al. containing a light-to-heat converting dye, a leuco dye, a developing agent, and a binder, based on the direction to form mixed recording layers by Nagai et al. and based on the disclosure to form mixed layers as an alternative to laminate recording layers by Azuma et al. with the reasonable expectation of forming a medium having excellent recording sensitivity as disclosed by Nagai et al. Further, it would have been obvious to record the media by uniformly heating the recording layers to obtain layers either in the colored or decolored state, and further to selectively record the layers by forming a colored pattern in the decolored recording layer(positive image) and forming a decolored pattern(negative image) in the

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colored recording layers based on the disclosure of Tsutsui.

Applicant argues that one of ordinary skill in the art would have no reason to modify the separate recording layer and light-to-heat transforming layers in Tonoï with the combined layers of the other reference. The examiner disagrees. Azuma teaches the use of combined layers as an alternative to separate recording layer and light-to-heat transforming layers and points out that they are in the same field of endeavor. The fact that Tonoï teaches a multi-layer embodiment and the other references teach single layer embodiments is irrelevant. It is the position of the examiner that the increased sensitivity purportedly achieved by Nagai by forming a mixed layer in a single layer recording medium will also be achieved by alternatively forming the recording layers of Tonoï as mixed layer rather than as a laminate. Further, Azuma teaches these mixed and laminate embodiments as alternatives. The applicant argues that the order is not taught and that the criticality of this is taught by comparative example 2. The problems occurring in comparative example 2 are attributable to heating of adjacent layers and overlapping absorption profiles of the IR dyes, but this showing is not commensurate in scope with the coverage sought, noting that media of Tonoï have interlayers and use different dyes and laser wavelengths, which prevents this. The examiner has shown that Tonoï does in fact render obvious the ordering limitations required by independent claim 8.

*In Tonoï et al. at (0013) the reference discloses that the lowest layer is blue, the middle layer is green or yellow and the top layer is red. Further, it is disclosed that the*

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*lowest layer is desired to be the darkest color and the "light color one by one make it consist of visibility". The examiner takes this to mean that by laminating the layers in order of increasing lightness the visibility is improved. Further the reference discloses the use of glass substrates at (0011). In the case where a blue layer, a green or yellow layer, and a red layer are laminated on a glass substrate, or any transparent substrate, recording can be done from either side of the laminate. It is further noted that the benefits of Tono et al. are identical to those recited by the applicant and include finer and clearer(no fogging) multiple color images.*

### **Double Patenting**

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164



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USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 8-14 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 6,995,116 in view of Tono et al. JP-2001-001645.

The claims of patent No. 6,995,116 recite all the limitations of the instant claims except for the limitation that the recording layer formed closest to the substrate absorb at the longest wavelength and that the wavelength at which subsequently formed layers absorb be shorter than this wavelength. Further, the claims of patent No. 6,995,116 do not recite the limitation that at least one of said light-to-heat transforming materials is

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cyanines or phthalocyanines.

Tonoi et al. teaches the use of phthalocyanines and cyanines at (0027). In an example Tonoi forms a reversible thermosensitive recording medium in which three recording layers are formed on a substrate and insulating thermal breaks were deposited between the three recording layers. The colors of the recording layers deposited on the substrate were sequentially, red, blue, and then green(0040 and 0033).

This double patenting rejection is maintained based on Tonoi's disclosure to form the recording layers in various orders at (0013).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANNA L. VERDERAME whose telephone number is (571)272-6420. The examiner can normally be reached on M-F 8A-4:30P.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on (571)272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Mark F. Huff/

Supervisory Patent Examiner, Art Unit 1795

/A. L. V./

Examiner, Art Unit 1795